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JUL 08 1994

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 600587

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	Environmental Engineering 81234	N/A
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
ER	K. A. Bergstrom	N/A
8. Originator Remarks: Release		**9. Equip./Component No.:** N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date:

JUL 1994 RECEIVED EDMC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-TI-228		0	Geophysical survey for proposed borehole 199-K-108A, 100 K Area	~~4~~ N/A	1/2	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1/2	2	Cog.Eng. K. A. Bergstrom	K.A. Bergstrom	1-19-94	H6-06	EPIC (2)			H6-08	3	
1/2	2	Cog. Mgr. J. W. Fassett	J.W. Fassett		H6-06	B. A. Williams			H6-06	3	
		QA				J. F. Keller			L4-93	3	
		Safety				IRA (2)			H4-17	3	
		Env.									
3		Geophysical Files (2)			H6-06						
3		Central Files (2)			L8-04						

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No.
K. A. Bergstrom Signature of EDT Originator Date 1-19-94	Authorized Representative for Receiving Organization Date	J. W. Fassett Cognizant/Project Engineer's Manager Date 1-28-94	[] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

BD-7400-172-1 (07/91)

7-1-94/DS

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- [ ] Speech or Presentation (Check only one suffix)
  - [ ] Full Paper
  - [ ] Summary
  - [ ] Abstract
  - [ ] Visual Aid
- [ ] Speakers Bureau
- [ ] Poster Session
- [ ] Videotape
- [ ] Reference
- [X] Technical Report
- [ ] Thesis or Dissertation
- [ ] Manual
- [ ] Brochure/Flier
- [ ] Software/Database
- [ ] Controlled Document
- [ ] Other

ID Number (include revision, volume, etc.): WHC-SD-EN-TI-228, Rev. 0

List attachments.

Date Release Required: 02-15-94

Title: Geophysical Survey for Proposed Borehole 199-K-108A, 100-K Area

Unclassified Category: UC- 630

Impact Level: N/A

New or novel (patentable) subject matter? [X] No [ ] Yes If "Yes", has disclosure been submitted by WHC or other company? [ ] No [ ] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? [X] No [ ] Yes (Identify)

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Group or Society Sponsoring

Date(s) of Conference or Meeting

City/State

Will proceedings be published? [ ] Yes [ ] No

Will material be handed out? [ ] Yes [ ] No

Title of Journal: N/A

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[ ]	[X]			
Patent - General Counsel	[ ]	[X]			
Legal - General Counsel	[ ]	[X]			
Applied Technology/Export Controlled Information or International Program	[ ]	[X]			
WHC Program/Project	[ ]	[X]			
Communications	[ ]	[X]			
RL Program/Project	[X]	[ ]	E. D. Goller	E D Goller	6/30/94
Publication Services	[X]	[ ]	L. S. Hermann	L S Hermann	7/1/94
Other Program/Project	[ ]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[ ]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[X]	[ ]

Author/Requestor (Printed/Signature) Date

for K. A. Bergstrom J. W. Fassett 6/30/94

Intended Audience

[ ] Internal [ ] Sponsor [X] External

Responsible Manager (Printed/Signature) Date

J. W. Fassett J. W. Fassett 6/30/94

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE OFFICIAL USE ONLY 7-1-94

Date Cancelled

Date Disapproved

9417279.1588

SUPPORTING DOCUMENT

1. Total Pages 6

2. Title	3. Number	4. Rev No.
Geophysical Survey for Proposed 199-K-108A, 100-K Area	WHC-SD-EN-TI-228	0

5. Key Words	6. Author
Ground-penetrating radar, geophysics	Name: K. A. Bergstrom J.W. Fassett Signature Organization/Charge Code 8C540/KK481

APPROVED FOR PUBLIC RELEASE
7-1-94 D. Solis

7. Abstract

WHC, 1994, Bergstrom, K. A. and T. H. Mitchell, *Geophysical Survey for Proposed Borehole 199-K-108A, 100-K Area*, WHC-SD-EN-TI-228, Rev. 0, Westinghouse Hanford Company, Richland, Washington."

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9. Impact Level N/A

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)
DATE JUL 08 1994
Station # 12

9410270.1599

A-6400-073 (11/91) (EF) WEF124

1.0 OBJECTIVE

The objective of the survey was to locate subsurface obstructions that may affect the drilling of proposed borehole, 199-K-108A, about 75 ft southeast of the 105 KW Building, 100-K Area, (Figure 1). Based upon the results of the survey, possible drill sites within the zone, with the least likelihood of encountering identified obstructions, were identified.

2.0 GROUND-PENETRATING RADAR METHODOLOGY

The ground-penetrating radar (GPR) system used for this work utilized a 300-megahertz antenna to transmit the electromagnetic energy into the ground. The transmitted energy is reflected back to a receiving antenna where variations in the return signal are recorded. Common reflectors include natural geologic conditions such as bedding, cementation, moisture, and clay, or man-made objects such as pipes, barrels, foundations, and buried wires.

The method is limited in depth by transmit power, receiver sensitivity, frequency, and attenuation of the transmitted energy which can be strongly affected by geology. Depth of investigation is also influenced by highly conductive material, such as metal drums, which reflect all the energy back to the receiver. Therefore, the method cannot "see" below such objects. Maximum depth of penetration for this survey was about 12 ft.

Display and interpretation of the data are similar to seismic reflection data. In some areas, interpretations can be straightforward, but often unknown parameters within a highly variable subsurface yield complex data.

Data for these surveys were collected with a Geophysical Survey Systems Inc. (GSSI) Subsurface Interface Radar (SIR) [a trademark of Geophysical Survey Systems Inc. (GSSI)] System 8, model 4800 and digitally stored on a GSSI DT6000A tape drive. A recording window of 100 nanoseconds, two-way travel time, was used.

3.0 GRID LOCATION

The survey boundary is a square, measuring 50 ft by 50 ft (Figure 2). Painted stakes mark the corners of the grid. The survey strikes approximately N28W. All distances were measured and posted in feet. The southwestern corner of the grid is designated E100/N100 and serves as the "origin" for the survey locations. The letters "N" or "E" refer to a direction that trends generally north or east, respectively. The number refers to a distance in feet. For example, grid point E135/N120 lies 35 ft "east" and 20 ft "north" of grid point E100/N100.

Data were collected along two sets of profiles perpendicular to each other. Spacing between profiles was 5 ft.

4.0 QUALITY CONTROL

These data were collected using procedures in WHC-CM-7-7, EII 11.2, Rev. 3, *Environmental Investigations and Site Characterization Manual*, Westinghouse Hanford Company. The data and records are stored in the Geophysics files. Figure 3 summarizes survey parameters.

5.0 RESULTS

Two linear features are evident in this data set. The first correlates with a fire hydrant located at N97/E93 (Figure 2). This linear, pipe-like feature, is 5 ft below the surface and trends toward the 105 KW Building along the E93 grid line. The second linear anomaly trends along the N145 grid line. It is about 5 ft below the surface and cannot be traced to the southwest beyond about E113.

Much of the survey area contains scattered debris and the entire site appears to have been disturbed and is not intact geologically. A horizon about 20 ft by 35 ft is buried 3 ft below the surface. It has distinct edges and is similar in character to buried concrete slabs observed in other surveys. This slab-like feature extends from N114 to N135 and from E109 to E146.

Initially, the proposed borehole site was staked at N124/E124, in the center of the slab-like anomaly. An alternate borehole site at N129/E106 is recommended in order to minimize the likelihood of drilling into significant debris or anomalies.

Figure 1. Location Map.

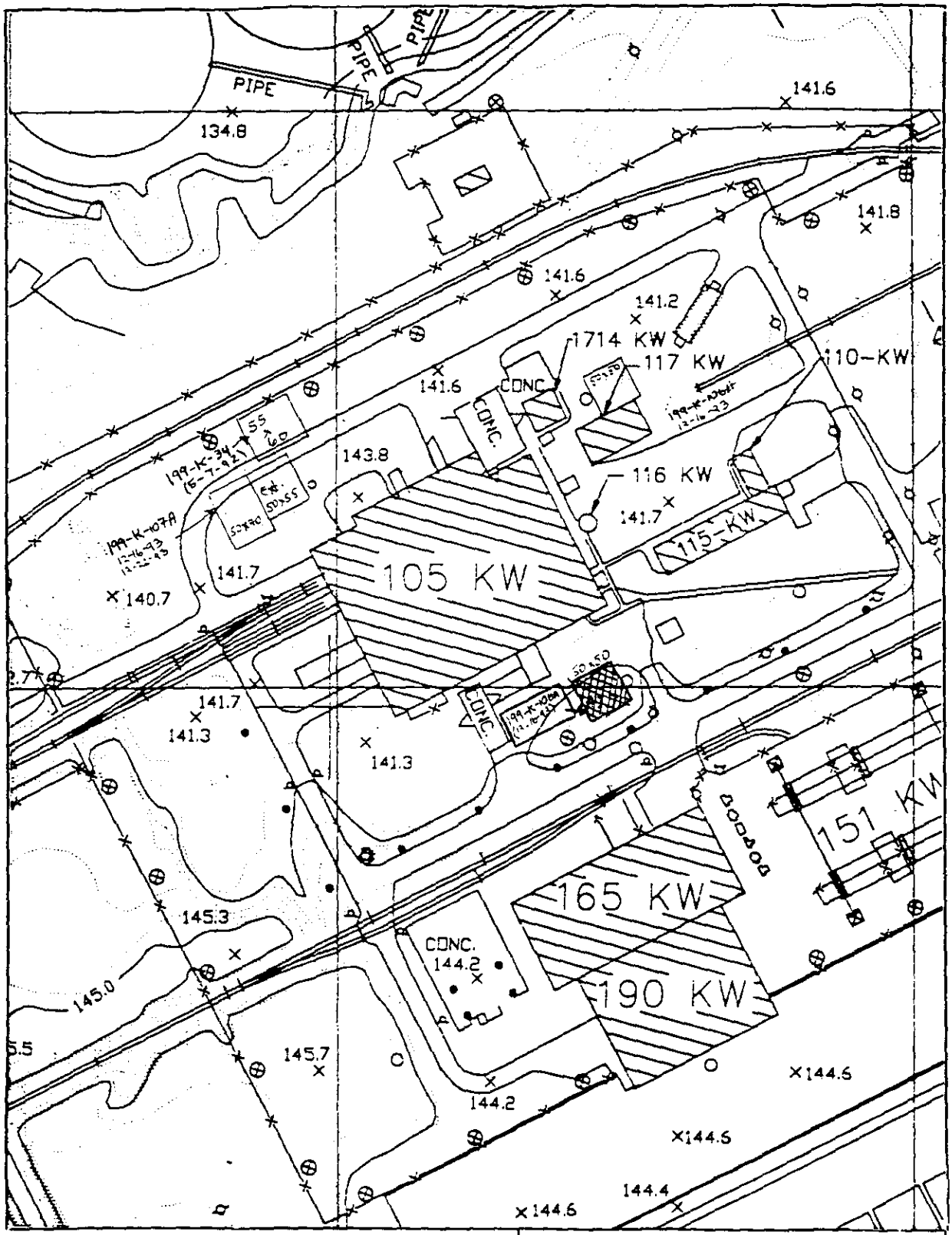

Figure 2. Interpretation Summary.

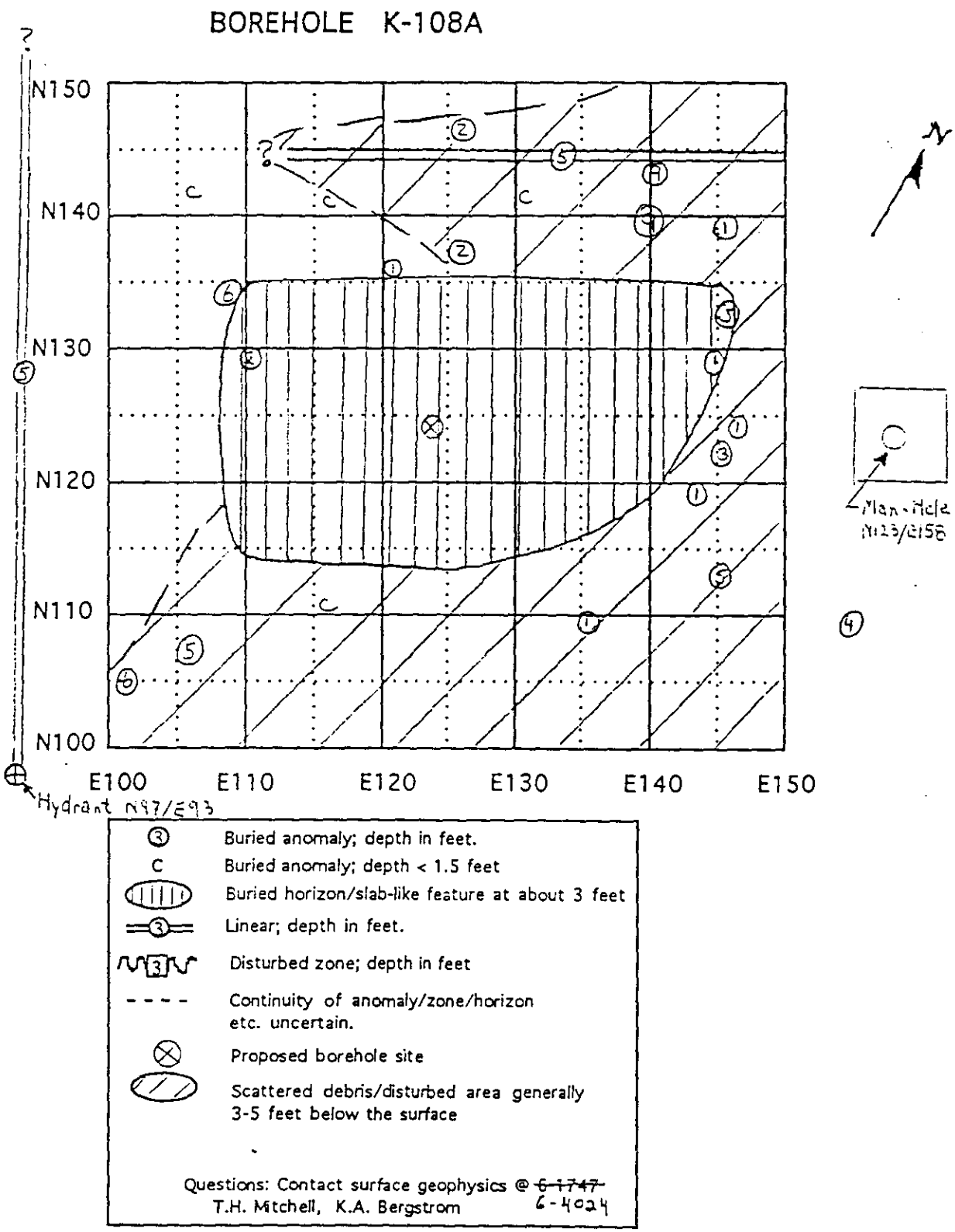

Figure 3. GPR Parameters of the 199-K-108A Well Site Survey.

GROUND PENETRATING RADAR (GPR) SURVEY

Team Geophysics, Westinghouse Hanford Operations

TITLE: Borehole 199-K-108A	DATE: 12/16/93
LOCATION: 100 K Area	
CLIENT:	DATA COLLECTED BY G.J. Szwartz & T.H. Mitchell
EQUIPMENT USED: GSSI System 8, model 4800 Calibrator Model P731 Digital Tape Recoder DT6000A	ANTENNA(S) USED: 100 ____ 300 XX 100 BISTATIC ____
	LOG BOOK: EFL1109
	TIME WINDOW (NS): 100
PROCEDURES FOLLOWED: WHC-CM-7-7 EII 11.2, REV. 3	
GRID : 50 X 50 NO. OF PROFILES: 20 TOTAL FOOTAGE COLLECTED: 1000	
PARAMETERS: Two sets of perpendicular profiles; five feet between profiles.	
DATA TAPE NO.: 94-5 RECORDS LOCATION: Geophysical field files	
TAPE ADDRESS : 0-15149 CALIBRATION ADDRESS: 14657-15149	
INTERPRETED BY : K.A. Bergstrom REVIEWED BY : T.H. Mitchell	
INTERPRETATION DELIVERED TO _____ DATE : 12/22/93	
OBJECTIVE(S): To locate subsurface obstructions that may adversely affect the borehole.	
NOTES: Antenna pulled by hand at 1-2 mph on the south and east side of the survey marks.	